

# Source Water Assessment Program (SWAP) Report For NIPMUC/MISCO Hill Elementary School



Prepared by the  
Massachusetts Department of  
Environmental Protection,  
Bureau of Resource Protection,  
Drinking Water Program

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**Table 1: Public Water System (PWS) Information**

<i>PWS NAME</i>	NIPMUC/Misco Hill Elementary School
<i>PWS Address</i>	148 North Avenue
<i>City/Town</i>	Mendon
<i>PWS ID Number</i>	2179004
<i>Local Contact</i>	Ken Choiniere
<i>Phone Number</i>	(508) 473-1788

<i>Well Name</i>	<i>Source ID#</i>	<i>Zone I (in feet)</i>	<i>IWPA (in feet)</i>	<i>Source Susceptibility</i>
Well #1	2179004-01G	183	479	High

## What is SWAP?

The Source Water Assessment Program (SWAP), established under the federal Safe Drinking Water Act, requires every state to:

- ? inventory land uses within the recharge areas of all public water supply sources;
- ? assess the susceptibility of drinking water sources to contamination from these land uses; and
- ? publicize the results to provide support for improved protection.

## SWAP and Water Quality

Susceptibility of a drinking water source does *not* imply poor water quality. Actual water quality is best reflected by the results of regular water tests.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

## Introduction

We are all concerned about the quality of the water we drink. Drinking water wells may be threatened by many potential contaminant sources, including septic systems, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

### Purpose of this report:

This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential contaminant sources, the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

### This report includes:

1. Description of the Water System
2. Discussion of Land Uses within Protection Areas
3. Recommendations for Protection
4. Attachments, including a Map of the Protection Areas

## 1. Description of the Water System

The well for the facility is a bedrock well located in the basement of the school building. The well has a Zone I of 183 feet and an Interim Wellhead Protection Area (IWPA) of 479 feet. The well is located in an aquifer with a high vulnerability to contamination due to the absence of hydrogeologic barriers that can prevent contaminant migration. Please refer to the attached map of the Zone I and IWPA.

The water quality of the well currently meets all US Environmental Protection Agency drinking water standards. The well serving the facility has no treatment at this time. For current information on monitoring results and treatment, please contact the Public Water System contact person listed above in Table 1.

### What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by the water supplier and limited to water supply activities.

- **The IWPA** is the larger area that is likely to contribute water to the well.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

### What is Susceptibility?

Susceptibility is a measure of a well's potential to become contaminated due to land uses and activities within the Zone I and Interim Wellhead Protection Area (IWPA).

## 2. Discussion of Land Uses in the Protection Areas

There are a number of land uses and activities within the drinking water supply protection areas that are potential sources of contamination.

**Key issues include:**

1. **Inappropriate activities in Zone I;**
2. **An underground storage tank (UST) with heating oil;**
3. **Septic system; and**
4. **Stormwater drain.**

The overall ranking of susceptibility to contamination for the well is High, based on the presence of at least one high threat land use or activity in the IWPA, as seen in Table 2.

**1. Zone I** – Currently, the well does not meet DEP's restrictions, which only allow water supply related activities in Zone Is. The facility's Zone I contains school buildings, a road, parking areas, Underground Storage Tank, hazardous material storage (diesel and gasoline for the lawn mower) and recreational activities. The school has a cafeteria with a grease trap that is hooked up to a holding tank. The holding tank is pumped once a year. Please note that systems not meeting DEP Zone I requirements must get DEP approval and address Zone I issues prior to increasing water use or modifying systems.

**Recommendations:**

- ✓ Keep non-water supply activities out of the Zone I.
- ✓ Remove all non-water supply activities from the Zone I to comply with DEP's Zone I requirements. Please note that water systems not meeting DEP Zone I requirements must get DEP approval and address Zone I issues prior to increasing water use or modifying their system.
- ✓ If the school intends to continue utilizing the structures, road, recreational activities and parking areas in the Zone I, use BMPs and restrict activities that could pose a threat to the water supply.

**2. Underground Storage Tank** – A UST with heating oil is within the Zone I and IWPA. The tank is double walled with a capacity of 10,000 gallons.

**Recommendation:**

- ✓ Any modifications to the UST must be accomplished in a manner consistent with Massachusetts's plumbing, building, and fire code requirements. Consult with the local fire department for any additional local code requirements regarding USTs.

**Table 2: Table of Activities within the Water Supply Protection Areas**

Facility Type	Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
School	Fuel Storage Below Ground	Yes	Yes	High	Heating oil tank
	Crop land and lawn care	No	Yes	Moderate	Fertilizer use
	Parking lot, driveways & roads	Yes	Yes	Moderate	Limit road salt usage and provide drainage away from wells
	Athletic Field	No	Yes	Moderate	Fertilizer and pesticide use
	Septic System	No	Yes	Moderate	See septic systems brochure in the appendix
	Hazardous material storage	Yes	Yes	High	Diesel and gasoline used in lawn mower etc.
	Structures (school building)	Yes	Yes	--	Non-water supply structures in Zone I

\* -For more information on Contaminants of Concern associated with individual facility types and land uses please see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website - [www.state.ma.us/dep/brp/dws/](http://www.state.ma.us/dep/brp/dws/).

## Glossary

**Zone I:** The area closest to a well; a 100 to 400 foot radius proportional to the well's pumping rate. To determine your Zone I radius, refer to the attached map.

**IWPA:** A 400 foot to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone I. To determine IWPA radius, refer to the attached map.

**Zone II:** The primary recharge area defined by a hydrogeologic study.

**Aquifer:** An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

**Hydrogeologic Barrier:** An underground layer of impermeable material that resists penetration by water.

**Recharge Area:** The surface area that contributes water to a well.

- ✓ Upgrade all oil/hazardous material storage tanks to incorporate proper containment and safety practices.

**3. Septic system** – The septic system is located within the IWPA. If a septic system fails or is not properly maintained it could be a potential source of microbial contamination. Improper disposal of household hazardous chemicals to septic systems is a potential source of contamination to the water supply.

### Recommendations:

- ✓ Staff should be instructed on the proper disposal of spent household chemicals. Include custodial staff, groundskeepers, and certified operator.
- ✓ Septic system components should be located, inspected, and maintained on a regular basis. Refer to the attachments for more information regarding septic systems.

**4. Stormwater drain** – There are several stormwater drains within the IWPA. As flowing stormwater travels, it picks up debris and contaminants from streets, parking areas, and lawns. Common potential contaminants include lawn chemicals, pet waste, leakage from dumpsters, household hazardous waste, and contaminants from vehicle leaks, maintenance, washing or accidents.

### Recommendations:

- ✓ Have the catch basins inspected, maintained, and cleaned on a regular schedule.
- ✓ Ensure that stormwater is diverted away from the Zone I.
- ✓ The Department recommends the public water supplier consider nonstructural techniques such as parking lot sweeping to reduce the amount of potential contaminants in storm water runoff. Additionally, the public water supplier may want to consider structural BMPs (e.g. stormwater swale, detention basin, etc.) as part of comprehensive storm water management plan for the site (refer to Storm Water Management Handbook, Volume 1 and 2 for information on BMPs).

Implementing the following recommendations will reduce the system's susceptibility to contamination.

## 3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will reduce

the well's susceptibility to contamination. NIPMUC/Miscoe Hill school should review and adopt the following recommendations at the facility:

### Zone I:

- ✓ Consider well relocation if Zone I threats cannot be mitigated. Please note that DEP Permit Approvals must be obtained prior to the installation of a new well.

### Training and Education:

- ✓ Instruct staff on proper hazardous material use, disposal, emergency response, and best management practices; include custodial staff, groundskeepers, certified operator, and food preparation staff.
- ✓ Post drinking water protection area signs at key visibility locations.
- ✓ Incorporate groundwater education into school curriculum

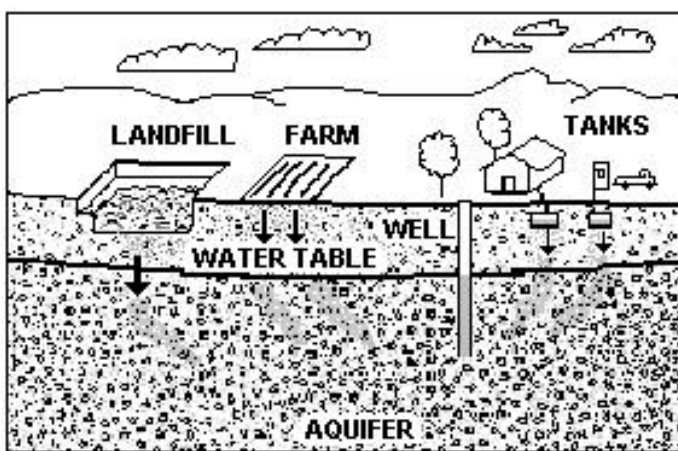


Figure 1: Example of how a well could become contaminated by different land uses and activities.

### **For More Information:**

Contact [Josephine Yemoh-Ndi](#) in DEP's [Worcester Office](#) at (508) 792-7650 x 5030 for more information and for assistance in improving current protection measures.

More information relating to drinking water and source protection is available on DEP's web site at: [www.state.ma.us/dep/brp/dws](http://www.state.ma.us/dep/brp/dws).

### **Additional Documents:**

To help with source protection efforts, more information is available by request or online at [www.state.ma.us/dep/brp/dws](http://www.state.ma.us/dep/brp/dws), including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

Copies of this assessment have been provided to the water department, town boards, the town library and the local media.

### **Facilities Management:**

- ✓ Implement standard operating procedures regarding proper storage, use and disposal of hazardous materials.
- ✓ Implement Best Management Practices (BMPs) for the use of fertilizer, herbicides and pesticides on facility property.

### **Planning:**

- ✓ Work with local officials in Mendon to include the facility IWPA in Aquifer Protection District Bylaws and to assist you in improving protection.
- ✓ Have a plan to address short-term water shortages and long-term water demands. Keep the phone number of a bottled water company readily available.
- ✓ Supplement the SWAP assessment with additional local information and incorporate it into water supply educational efforts. Use a potential contaminant threat inventory to assist in setting priorities, focusing inspections, and creating educational activities.

### **Agricultural:**

- ✓ Consider obtaining a conservation restriction for any agricultural land within the IWPA. Another option is to negotiate a "Memorandum of Understanding" (MOU) with the farmer to refrain from using pesticides and fertilizers and eliminate manure storage within the IWPA.

These recommendations are only part of your ongoing local drinking water source protection. Citizens and community officials should use this SWAP report to spur discussion of local drinking water protection measures.

## **4. Attachments**

- Map of the Public Water Supply (PWS) Protection Area.
- Recommended Source Protection Measures Factsheet
- Your Septic System Brochure
- Pesticide Use Factsheet